



NORTH CAROLINA

Department of Transportation



Transportation Mobility and Safety Division, Roles during Hurricane Florence

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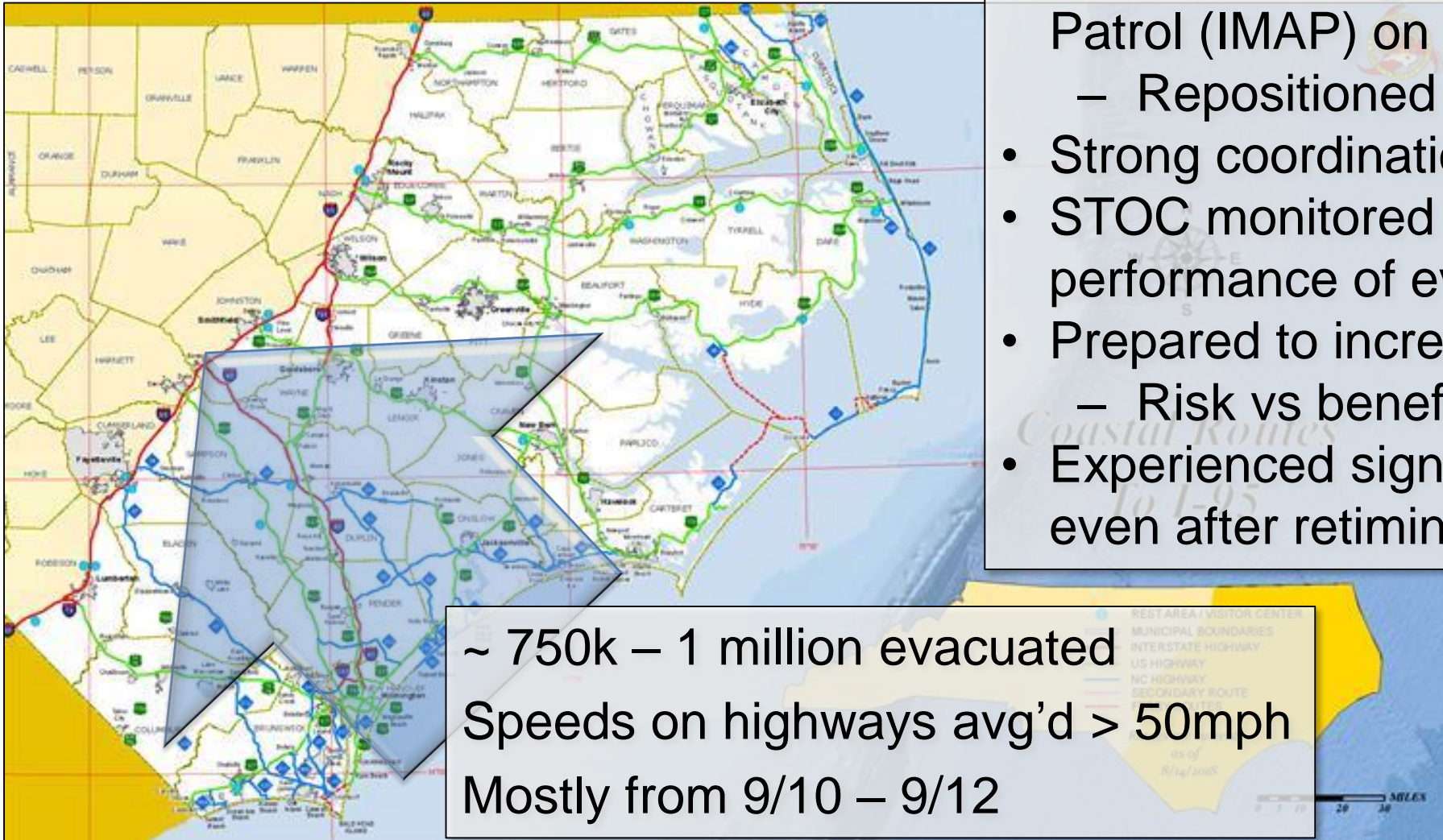
October 3, 2018

Outline

- Evacuation
- During Storm
- Post Storm
- Lessons Learned



Evacuation



- Incident Management Assistance Patrol (IMAP) on Key Routes
 - Repositioned from across state
- Strong coordination with SHP
- STOC monitored speeds / performance of evacuation routes
- Prepared to increase capacity
 - Risk vs benefit
- Experienced signal delays on US 70, even after retiming

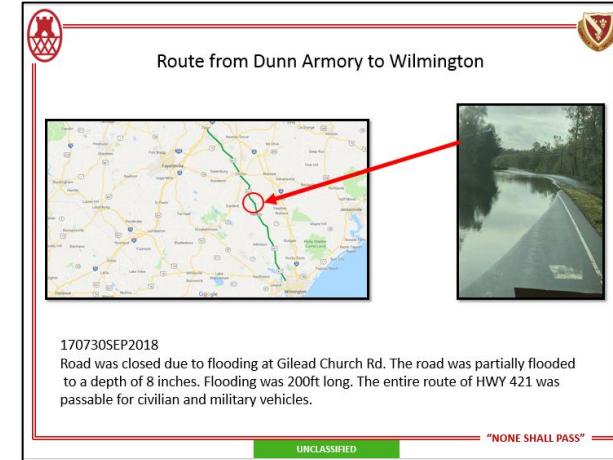
During Storm

- Tracked Events as Reported
- Planned Detour Routes
 - Interstate, Regional, Local Detours
 - Evacuation Routes
 - Coordination with GPS providers
- Parallel planning and coordination with:
 - Hydraulics
 - Aviation
 - Divisions and Maintenance
 - Neighboring States
 - Emergency Management



Post Storm

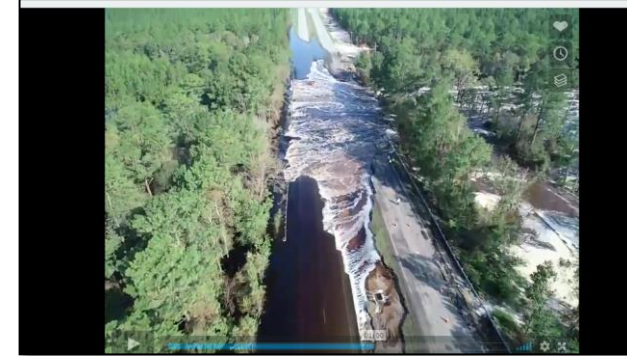
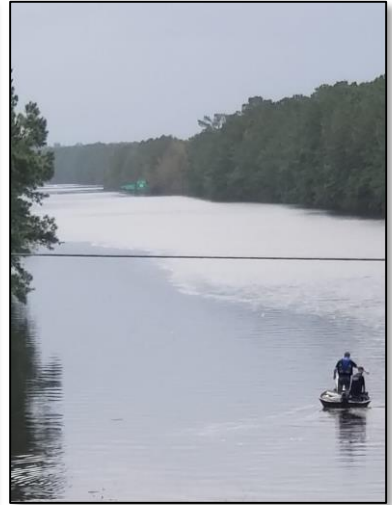
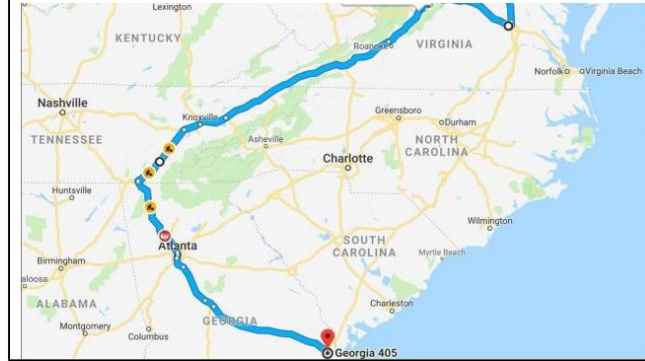
- Dynamic Road Conditions (I95, I40 closed)
 - ~1600+ road closures peak
 - Major facilities were lost, recovered, and lost again
 - Life cycle of route – 30 minutes
- Main Effort – Emergency Routing
 - Emergency Routing Room (24/7 staffing)
 - Focused on managing public vs emergency-use routes
 - Routed 1000s of emergency vehicles
 - Route coordination for FEMA, utility companies, non-profits, medical professionals, DOD, large retailers
 - Road closure reports on the hour
- Coordination with Aviation (DOD and DOT), State Highway Patrol and National Guard Assets for Route Reconnaissance
 - Confirmed route closures and bypasses



Post Storm

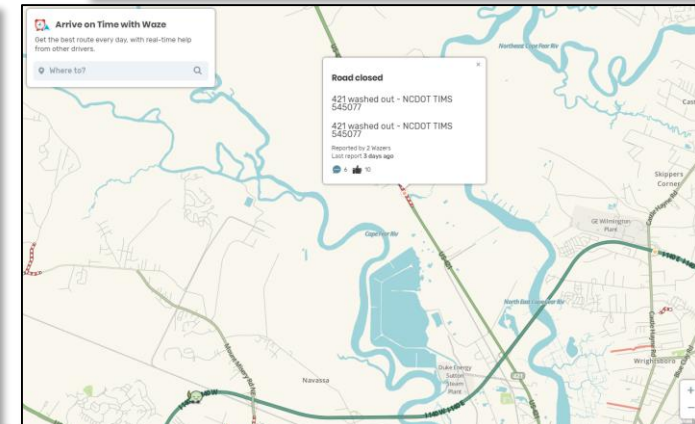
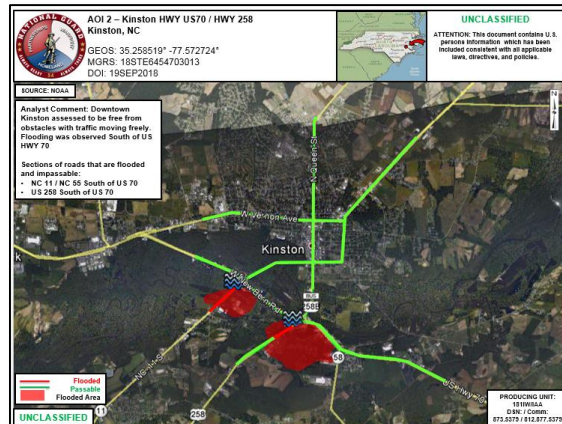
- Treated Agricultural Needs as Emergency Needs
 - Helped to route hogs and chickens
- Return Travel Discouraged
 - Same Message from Governor, Secretary of DOT, EM, SHP Colonel
- Communications to Public
 - DriveNC and Call Center
 - Avoid the area
 - Did not provide routes
 - Demand Management Initiatives
 - Hard stops on interstates
 - Maintained exclusive emergency response routes
 - Long detours to avoid the state
 - Social media provided routes failed (US70, US258, US421, etc)
 - Continuous coordination with navigation providers – not perfect

"This is an extremely long detour, but it is the detour that offers the lowest risk of flooding at this time," the DOT wrote, noting that travel is hazardous and the risk of flooding is present at any time over the next 24 hours on all roads south of U.S. Highway 64 and east of Interstate 73/74.



External Collaboration

- Emergency Management, National Guard, State Highway Patrol, FHWA, US DOT
- Virginia, South Carolina, Tennessee, Georgia, Florida
- Utility and Recovery Support - Duke Energy, Verizon, Walmart, AT&T
- Assisted living, health and human resources, medical professionals
- GPS Companies (Waze, Google, HERE)

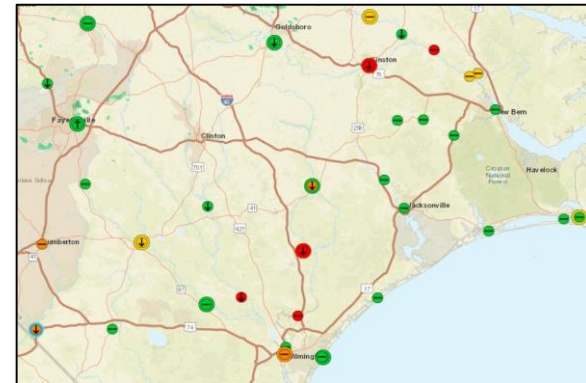
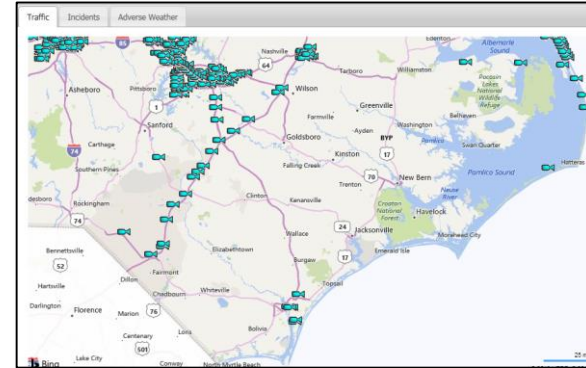


Resource Lessons Learned

- **Regional vs Statewide Response from STOC**
 - Major fatal crash on I85
 - World Equestrian Games
- **Need to budget for operational contingencies during major events**
- **Consider surge capacity in JFHQ for operational needs**
- **Other State Efforts**
 - Large evacuations are multi-state events
 - Pumped evacuation traffic from NC and SC into largest metropolitan areas during a normal business day
 - Limited IMAP resources to support competing priorities

Technology Lessons Learned

- **IMAP (real-time updates)**
 - Need modern fleet management technology
 - Need modern communication tools
- **Evacuation routes (situational awareness and traveler information)**
 - Gaps in camera coverage and stream gauges
 - Dynamic message signs not along any major evacuation route east of I95
 - Portable and non-dynamic changeable message signs are interim solution
 - Must have stream gauges at vulnerable flooding areas
- **Emergency Routing**
 - Currently, paper map overlay – easy to use and update, difficult to share
 - Need to develop easy and sharable emergency routing and detour map
- **TIMS / DriveNC**
 - More of a service than a website; requires constant monitoring to best support GPS providers
 - Need redundancy for continuity of service
 - Need to modernize traffic information management tools (emergency vs everyday conditions)



Summary

- Travel Demand Management (inside and outside state) for major events before, during and after event is critical
 - Balance between major events and routine business
- Demand for critical travel information continues to rise
- Drone reconnaissance adds value
- Safety Issues
 - Need specific statute that prohibits bypassing and/or removing barricades
 - Social media encouragement of citizens to travel in flood inundated areas is dangerous
- Navigation providers improved since Hurricane Matthew
 - They have committed to continue working with us on this issue

